DOCUMENT RESUME

ED 147 772 CS 003 813

AUTHOR Paradis, Edward; Peterson, Joe
TITLE Effects of Order for the Administration of Subtests on Standardized Reading Test Scores.
PUB DATE Dec 77
NOTE 11p.; Paper presented at the Annual Meeting of the National Reading Conference (27th, New Orleans, Louisiana, December 1-3, 1977)

EDRS PRICE MF-$0.83 HC-$1.67 Plus Postage.
DESCRIPTORS *Reading Research; *Reading Tests; Secondary Education; *Testing Problems; Test Reliability; Test Validity
IDENTIFIERS *Order Analysis

ABSTRACT

This study, involving 131 students in grades ten, eleven, and twelve, investigated the effects of order of administration of subtests on scores from the Nelson-Denny Reading Test. Results indicated that order of administration had no significant effect on scores from the vocabulary subtest or on the total test score, but subjects taking the vocabulary subtest before the comprehension subtest obtained higher comprehension scores than those taking them in reverse order. (AA)

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EFFECTS OF ORDER FOR THE ADMINISTRATION OF SUBTESTS ON STANDARDIZED READING TEST SCORES

Edward Paradis
University of Wyoming

Joe Peterson
Western Illinois University

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CS003813

23.1 Paper Session

Twenty-Seventh Annual Meeting of the National Reading Conference
December 1, 2, 3, 1977, New Orleans, Louisiana

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Many standardized reading tests provide a total test score composed of scores yielded by various subtests. Subtests are designed to measure specific skills which have been judged to be integral to the reading process. The value of scores from subtests has been questioned by Farr (1969) as to whether the subtests have sufficient discriminant validity to measure separate skills, but test publishers continue to develop subtests and often provide norms for separate subtests.

Research in reading periodically focuses on separate skill areas and is concerned with only selected aspects of a total standardized test score. Efficient time usage would seem to suggest that if interest is in a specific skill area, only that portion of a test dealing with the specific skill be administered. This would seem especially appropriate in a subskill such as comprehension, which has been identified as a separate skill (Carroll, 1972).

A recent study by Peterson et al. (1976) is an example of research in which a subtest score from a standardized reading test was used. This study was an attempt to determine whether cautiousness or original thinking personality traits might influence cloze performance independent of reading ability. To achieve cloze performance independent of reading ability, subjects were given cloze passages matched to their reading comprehension levels. Reading comprehension levels were determined by scores on the com-

prehension subtest of the Nelson-Denny Reading Test. The comprehension subtest alone was administered because: 1) administering one subtest seemed to be an expiditious use of subjects' time, 2) a general comprehension ability is reported to exist somewhat independent of vocabulary ability (Carroll, 1972), 3) comprehension subtest scores and norms are provided in the Examiner's Manual separate from scores for the subtests of vocabulary and rate, and from total test scores, and 4) the comprehension test appeared quite independent of the vocabulary test in terms of administrative details.

Data from the Peterson et al. (1976) study indicated that mean score results on the completed cloze passage exercises were higher than expected when compared to previous research reports (Bormuth, 1967; and Peterson et al., 1972). The results did not affect the credibility of the study but did raise the question as to whether the cloze passages were indeed matched to the subject's appropriate reading level.

An earlier study by Peterson et al. (1972) had employed the same procedure to assign the identical cloze passages to subjects except the entire Nelson-Denny Reading Test was administered to determine reading level. In this study, cloze score results were within the expected range of success as indicated by Bormuth's (1967) research.

The major difference between the Peterson et al. (1976) study and the Peterson et al. (1972) study was the manner in which the reading test was administered. The cloze test results from the two studies suggest that the subjects in the Peterson et al. (1976)

study received cloze passages that were below their reading instructional level while the subjects in the Peterson et al. (1972) study received passages at their instructional level. The single difference in the assignment procedure for cloze passages was whether the subjects were administered the entire Nelson-Denny Reading Test or if the subjects received just the comprehension subtest. Thus, the manner in which the reading tests were administered seemed to be related to the scores on the individual subtests.

Purpose

The purpose of this study was to systematically examine the effects of order for the administration of subtests on a standardized reading test. The answer to the following question was sought:

> What difference in subtest scores and total test score will be found when the order for the administration of the subtests for vocabulary and comprehension are reversed?

Subjects

A total of 131 subjects in grades ten, eleven and twelve in North Dakota and Wyoming participated in the study. Sixty-nine subjects resided in North Dakota and sixty-two subjects lived in Wyoming. All subjects were residents of communities with a population of 25,000 or less.

Procedure

Materials. The standardized test used for data collection was the Nelson-Denny Reading Test, Forms A and D. Subjects in North Dakota were administered Form A while subjects in Wyoming received Form D.

The primary question under investigation was the effect of order for the administration of the subtests, vocabulary and comprehension, within the Nelson-Denny Reading Test. Two forms of the test were used to collect data and while the format for the two forms is identical, Form A was copyrighted in 1960 and Form D in 1973. Form A was used exclusively with the subjects in North Dakota and Form D was used with subjects in Wyoming.

Use of tests in this manner presents a possible confounding of the variable test form with state. This variable will be referred to as "state" even though the possibility exists that it represents effects due to the two different forms. If an interaction exists involving this variable, caution must be used in interpreting the results.

In order to test for interaction involving the state variable, an analysis of variance was conducted using factors of state and order of subtest administration. Tables 1 and 2 present data relative to this analysis.

Results indicate no significant interaction between the variables state and order. The lack of interaction suggest a consistant pattern in each state of mean score results for the order of subtest administration. As the results were in the same direction for both states, it seemed appropriate to pool the data leaving unresolved the true nature of the state vs. forms confounding.

Testing. All testing was done by experienced educators and test administration procedures followed the instructions in the Examiner's Manual. The only deviation from the manual was the

order in which subtests were administered which was the independent variable for the study.

Two orders of subtest administration were determined. Order one consisted of administering the subtests as directed in the Examiner's Manual which instructs that the subtest for vocabulary be given first and the subtest for comprehension second (VC). Order two reversed the sequence for administering the subtests, thus comprehension was given first followed by vocabulary (CV).

Subjects within each state were randomly assigned to one of the order groups VC or CV. Subjects went with the examiners to a testing room where the test was administered to groups of ten to twenty students.

The order for administering subtests was counter-balanced for examiners by state. Examiner one administered the subtests in the sequence: VC, CV, VC, CV. Examiner two reversed the order using the sequence: CV, VC, CV, VC.

Data Analysis

Tables 3, 4, and 5 report t test results relative to the effect of order for subtest administration on the subtests for vocabulary and comprehension and the total test score.

Findings

The central hypothesis under investigation examined the effects of the order for the administration of the subtests in the Nelson-Denny Reading Test on subtest and total test scores. Results indicated that the order of administration had no significant effect on the vocabulary subtest nor on the total test score.

The order of administration of subtests did, however, have a significant effect on the results of the comprehension subtest. Subjects taking the subtests in the order instructed by the Examiner's Manual, vocabulary then comprehension, scored higher than subjects taking the comprehension subtest followed by the vocabulary subtest.

Implications

The results of this investigation indicate that the order for administration of subtests of a standardized reading test or the partial administration of a reading test may influence the test score. In the present study, this effect was a lower score on the comprehension subtest when this test was administered prior to the vocabulary subtest.

Research which employs standardized reading tests should be aware that raw scores may vary depending upon whether the entire test is administered or selected subtests of the test are used. The variablity of scores is particularly important if norm tables are to be used.

In this period of accountability and criterion reference testing, it may be tempting to administer only those portions of tests which appear most relevant to instruction. It should be remembered that norms for standardized tests may have been developed by administering the entire test battery. Use of norm tables for subtests when only a portion of the test has been administered seems questionable.

TABLE 1

Analysis of Variance Results
for the Factors
of State and Order

SV	df	SS	MS	F-Ratio	P-Value
State	1	1,542.465	1,542.465	3.500	.064
Order	1	231.398	231.398	.525	.470
SXO	1	114.430	114.430	.260	.611
Error	127	55,969.789	440.707		

TABLE 2

Mean Scores and Standard Deviations
for the Factors
of State and Order

State	Order 1			Order 2		
	Mean Score	S.D.	N	Mean Score	S.D.	N
Wyoming	68.471	24.798	34	67.679	20.891	28
North Dakota	63.457	18.460	35	58.912	19.311	34

TABLE 3

t Test Results on the Vocabulary Subtest
for the Effect of Order of Subtest Administration

Order	N	Mean	S.D.	SE	t Value	2-Tail Probability
VC	69	27.319	13.533	1.629	-.31	.75
CV	62	28.000	10.926	1.388		

TABLE 4

t Test Results on the Comprehension Subtest
for the Effect of Order of Subtest Administration

Order	N	Mean	S.D.	SE	t Value	2-Tail Probability
VC	69	38.464	10.018	1.206	1.96	.05
CV	62	34.871	10.982			

TABLE 5

t Test Results on the Total Test
for the Effect of Order of Subtest Administration

Order	N	Mean	S.D.	SE	t Value	2-Tail Probability
VC	69	65.928	21.799	2.624	.83	.41
CV	62	62.871	20.354	2.585		

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